{In Archive} Re: FW: Goliad County

Jose Torres to: Mark Krueger 10/19/2009 05:20 PM
Cc: Larry Wright, Philip Dellinger, Ray Leissner

From: Jose Torres/R6/USEPA/US
To: "Mark Krueger" <markkrueger@wildblue.net>
Cc: Larry Wright/R6/USEPA/US@EPA, Philip Dellinger/R6/USEPA/US@EPA, Ray Leissner/R6/USEPA/US@EPA
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Hello Mr. Krueger:

Thank you for your call of today, Monday, October 19, 2009. Here is a summary for the results of the modeling work that I shared with you a few weeks ago, I hope it proves valuable in answering your questions.

The first attachment is a Power Point file illustrating some of the data published by TWDB in 1973, which I used to validate the permeability value of 4700 md that I used for my preliminary drawdown estimates. It also describes the mathematical model that was the basis for this analysis.

The second Power Point file in the attachments shows on Slide 2 the location of the City of Victoria's water supply wells, per information provided internally by the Drinking Water group. I modeled the city's 15 wells as one well, assumed to be at the location of the city's No. 14 well, and identified as well No. 2-A in all of the attached maps. Slides 3 and 4 provide detailed information on the location and completion of the city's No. 14 well, and Slide 5 shows ground water production data for the city's wells during the year 2000. These data were provided by Mr. Tim Andruss of the Victoria County Groundwater Conservation District. The listed total produced volume for the 2000 year is consistent with the estimated total demand of 10,000 Acre-Ft provided by Mr. Jerry James of the office of Environmental Services of the City of Victoria. Mr. James informed that, at this time, 10% of the city's water demand is satisfied with ground water. Therefore, I used 1,000 Acre-Ft/Yr as the ground water production rate in my modeling work.

Slides 6 and 7 in the second attachment provide location, elevation and fluid level information on water supply wells in the surrounding area. The map in Slide 8 provided elevation information within the city limits. Slide 9 is a coarse graphic schematic of the modeled conditions in the aquifer at the end of 50 years of ground water production at the city of Victoria. Please note that this graph is not at scale, it is merely aimed at providing a visual impact on the predicted static fluid levels, measured in hypothetical wells located at the selected radial distances from the hypothetical "producer". Please also note that the pressure changes predicted by my model have been expressed as hydrostatic columns in Feet above/(below) sea level, in this graph.

Slide 10 is a sample of the contents of the third attachment, illustrating the conversion of the estimated pressure changes, in psi, to hydrostatic head changes, in Ft. The spreadsheet in Slide 10 also illustrates de conversion of the hydrostatic head changes to fluid levels in Feet above/(below) sea level. This information was used to construct the graph in Slide 9. A comparison of the output results from my computer program and the results from the spreadsheet's "Macro" is illustrated in Slide 11.

It is very important to note that my preliminary modeling work did not attempt to account for any aquifer recharge phenomena, and that it does not reflect the effects on the aquifer caused by the water production of any other wells. Though some fluid level data have been presented which provide a clue to the potential drawdown effects of some of the area's water supply wells. A confined aquifer with "one" producer was assumed at all times throughout this preliminary analysis. Based on a population of 65,000, provided by Mr. James, it is estimated that each City of Victoria citizen currently consumes close 14 gallons of ground water per day.

Again, I hope the above will assist in providing answers to your questions. Please do not hesitate to

call/e-mail me if you have further questions regarding this matter. Best regards,

Jose Eduardo Torres - 6WQ-SG
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091016COVgwSystemDrawdownAnalysisSummary_06.ppt


091006COVWSWdrawdownSummary_01.XLS

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Mark Krueger to: Jose Torres 09/15/2009 10:24 AM

Mr. Torres,

Please find below a reiteration of a previous question I had asked of EPA Region 6.

From: Mark Krueger [mailto:markkrueger@wildblue.net]
Sent: Thursday, July 30, 2009 1:08 PM
To: 'Torres.Jose@epamail.epa.gov'
Subject: Goliad County

Dear Mr. Torres,

The City of Victoria converted from 100% groundwater to 90% surface water / 10% groundwater in or about 2005. Recently, the Guadalupe River from which the surface water is drawn has dropped to such a low level that the city has now reverted back to 100% groundwater, in a manner of speaking. The groundwater is being drawn to 100% capacity, but then being routed to the Guadalupe River 1.1 river miles downstream from the point of surface water draw. In other words, Victoria is exchanging groundwater for surface water.

Regardless of which water the City of Victoria chooses to use, the drawdown in the aquifer in Victoria County has now increased to its pre-2005 levels, which means that the water in the aquifer northwest will travel to the southeast towards the Gulf of Mexico at an accelerated rate compared to the last four years. How would the rate of travel of exempted aquifer water in Goliad County away from the mining zone be affected if this shift were to occur during mining?

Thank you again for your attention.

Sincerely,

Mark Krueger

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